NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

FOREST SITE PREPARATION

(Acre)

CODE 490

DEFINITION

Treating areas to improve site conditions for establishing a forest by natural or artificial regeneration.

PURPOSE

- Encourage natural regeneration of desirable woody plants by controlling undesirable woody vegetation, removing slash, or altering site conditions.
- Permit artificial establishment of woody plants.

CONDITIONS WHERE PRACTICE APPLIES

On all lands where establishment of woody plants is desired. This includes harvested areas, understocked areas, areas where a land cover change to forest is desired, or areas having undesirable vegetation that competes with the preferred woody species.

CRITERIA

GENERAL CRITERIA APPLICABLE TO ALL PURPOSES

The method, intensity and timing of site preparation will match the limitations of the site, equipment, and the requirements of the desired woody species.

An appropriate site preparation method will be chosen to protect any desirable vegetation.

Remaining slash and debris shall not create habitat for or harbor harmful levels of pests.

Remaining slash and debris shall not hinder needed equipment operations or create an undue fire hazard.

Erosion and/or runoff will be controlled.

Soil compaction and displacement will be minimized.

Comply with applicable federal, state and local laws and regulations during the installation, operation and maintenance of this practice.

Mechanical Treatment

Initial costs of treatment should be weighed against future returns. Too intensive a treatment may not be economical, even though the result is an increase in volume.

On droughty soils with limited organic material, intensive site preparation may increase survival at the cost of later growth.

Ideally, proper site preparation reduces competition without removing or destroying topsoil and organic matter.

Disking and Furrowing. This method is most successful where a heavy sod is present. In light sod, disking and furrowing usually are not needed. A scalper on the tree planter can remove the grass competition and clear trash from its path in one operation. Disking on slopes of 10 percent or more should be avoided in order to prevent excess soil erosion.

Root raking and Bulldozing. Much of the topsoil and organic matter that is supposed to sift between the tines of a rootrake, nevertheless, is swept along with the woody material and deposited in or near the windrows. Considerable topsoil ends up in the windrows

with bulldozing also, and with both methods, considerable nonproductive time is spent backing away from windrows.

Where soils are highly erodible, low in nutrients, or on slopes greater than 10 percent, the adverse effects of dozing may outweigh any advantages. This method usually is best suited for areas with little slope and a moderate stocking of hardwoods. Beyond these limits, the amount of erosion that will result and the expense of the operation will need to be considered.

Shearing Blade Mounted on Dozer. Shearing involves cutting of trees and vegetation at the ground line using tractors equipped with angled or V-shaped shearing blades. This is often the best means of removing large numbers of stems too large for disking or drum chopping. It is best suited on fairly rock-free soils with little slope and relatively large amounts of unmerchantable material to be removed.

This practice can be applied on relatively stable soils with steeper slopes, if applied with care to avoid possible soil damaging situations. With care, little soil disturbance is necessary and most debris that would hinder planting is removed. A root rake or dozer blade is used in conjunction with this practice in order to pile or windrow debris.

Large piles and windrows of debris are slow to deteriorate. They also occupy more planting site area and result in more loss of topsoil through pushing of material farther across the ground. Minimizing size of windrows should be considered.

Chopping. Generally, a larger chopper is more effective than a smaller one. This method is best suited to level or gently rolling areas where the timber present is not exceptionally large (limited by the size of chopper used).

Root Plow. The tractor is usually equipped with a bulldozer blade or rootrake to knock down the larger stems, and the root plow is used to sever the tap, support and feeder roots of smaller stems and the support and feeder roots of larger stems on areas where timber clearing is desirable.

Soil Ripper. It can be used on areas where seedlings are to be planted to increase moisture infiltration and seedling survival, provided the soil type will permit this operation without creating additional harvesting problems such as turning up large rocks.

Prescribed Fire. This is a valuable supplement to some forms of mechanical or chemical control of competing vegetation. Other benefits are improved access and visibility, which increases efficiency and safety of planting operations.

Much of the eastern portion of the state has limited natural regeneration potentials, because of the high amount of leaf litter present. A prescribed burn will remove this litter so that the pine seed can come into contact with the soil, refer to Prescribed Burning (338) standard and specification.

Chemical Treatment

Site preparation with herbicides will usually be the cheapest method and cause the least amount of soil erosion. All chemicals will be applied in accordance with label guidelines.

Where it is determined that wildfire may be a hazard to stand regeneration or establishment or where prescribed burning is to be utilized, construction of firebreaks should be considered, refer to Firebreak standard (394).

Natural Regeneration

An adequate seed supply must be present.

Seed trees should be spaced approximately 120 feet apart with a minimum of three trees left per acre.

Seed trees should be vigorous, well-formed trees 12 inches DBH (diameter at breast height) or larger.

Mechanical Treatment

Protect streamside management zones and intermittent stream channels from all unnecessary soil disturbance with all mechanical treatment.

Disking and Furrowing. In most instances, install furrows and disk on contours to reduce soil erosion. Disk only area where planting is to be done or vegetative competition needs to be

controlled. Do not disk on slopes of 10 percent or more. On poorly drained sites, bedding with special disking equipment can be used to concentrate surface soil and litter into small ridges. Provide water outlets on bedded or furrowed areas at locations that will minimize soil erosion and sediment movement, preferably onto a vegetated area.

Using a Sheering Blade and Root rake with Bulldozers. Use a sheering blade and root rake on a bulldozer to push and windrow undesirable timber. Try to minimize soil disturbance in all areas this practice is applied. Make windrows on the contour when possible. They should be as narrow as possible and leave openings to facilitate planting and fire-fighting equipment.

Windrows may be burned prior to planting or seeding, refer to Prescribed Burning (338) standard and specification

Areas that have been repeatedly passed over with heavy equipment to the extent that the surface soil has become too compacted for normal plant growth should be loosened with a deep tillage implement.

Chopping. A single chopping treatment does not necessarily provide sufficient hardwood control, regardless of the size of equipment used. Sprouts develop at the collar of hardwood stumps and must be processed a second time. Profuse sprouting follows even the second treatment, but these sprouts are comparatively weak and pose less of a competitive threat to pines seeded or planted later.

Prescribed burning normally should follow the final chopping operation in order to be most effective in controlling resprouts, refer to Prescribed Burning (338) standard and specification

Root Plow. The subsurface method of attacking the roots is a good one. Oak sprouts originate at or above the root collar so the rootplow severing roots below this point is effective. Efficiency of the operation improves when cut roots are turned up at the soil surface then chopped by disking.

Soil Ripping. Soil ripping should be done on the contour with a 10 ft. spacing (+/- 6") between rip lines (ripper should have at least 2 shanks or teeth approx. 10 ft. apart). Rips should be a minimum of 18 inches deep.

The equipment operator must be able to move over stumps without pulling the ripper teeth up more than the minimum allowable ripping depth (18"). Ripping teeth will be less than 6 inches in width and will not have a sweep point or disc attachment that would turn the soil.

Ripping will be done when the soil is well drained and not wet. Forward or lateral displacement of soil is not acceptable. Soil will be loosened in place. Provide for discharge of drainage water onto vegetated surfaces whenever possible.

Sites will be burned prior to ripping, refer to Prescribed Burning (338) standard and specification. This practice usually requires the equivalent of a D-8 dozer or larger.

Harvest merchantable timber for pulpwood, saw timber, and charcoal wood during any of these operations, refer to Forest Stand Improvement (666) standard.

Tractors will not be operated over or in a stream course with a defined channel except at designated crossings, refer to Forest Trails and Landings (655) and Access Road (560) standard and specification.

Prescribed Fire. Use a prescribed fire on areas where leaf litter is preventing seedlings from sprouting or where competitive hardwood species can be controlled with fire, refer to Prescribed Burning (338) standard and specification.

Chemical Treatment

Several herbicides are available for site preparation, refer to references and Forest Stand Improvement (666) standard. These references and standards list methods of applying herbicides and the herbicides registered with the Oklahoma State Department of Agriculture for controlling undesirable hardwoods on forestland.

Avoid direct entry of chemicals into water bodies or flowing waters. Apply all chemicals in accordance with label instructions.

Remaining slash and debris shall not create habitat for or harbor harmful levels of pests.

Remaining slash and debris shall not hinder needed equipment operations or create undue fire hazard.

Accelerated erosion and/or runoff from site preparation will be controlled by supporting practices.

Comply with applicable laws and regulations.

CONSIDERATIONS

The chosen method should be cost effective and protect cultural resources, wildlife habitat, springs, seeps, wetlands and other unique areas. Refer to Wildlife Upland Habitat Management (645) and Riparian Forest Buffer (391) standard and specifications.

Visual quality objectives should be considered when selecting site preparation methods.

Anticipate possible off-site effects and modify the site preparation design accordingly.

Consider personnel safety during site preparation activities.

PLANS AND SPECIFICATIONS

Plans will address method of site preparation, species, and protection required for desirable woody plants.

Specifications for applying this practice shall be prepared for each site and recorded using approved specification sheets, job sheets, and narrative statements in the conservation plan, or other acceptable documentation.

OPERATION AND MAINTENANCE

Repair erosion control measures as necessary to ensure proper function. Access by vehicles during site preparation or after (i.e., before adequate tree and shrub establishment occurs) should be controlled to minimize erosion, compaction and other site impacts.

REFERENCES

Oklahoma Department of Agriculture - Forestry Division, "Forest Manager's Guide for Water Quality Management in Oklahoma".

OSU Extension Agents' Handbook of Insect, Plant Disease and Weed Control.